



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001**

March 29, 2010

The Honorable Gregory B. Jaczko
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: DRAFT FINAL REVISION 1 OF REGULATORY GUIDE 1.62, "MANUAL INITIATION OF PROTECTIVE ACTIONS"

Dear Chairman Jaczko:

During the 570th meeting of the Advisory Committee on Reactor Safeguards, March 4-6, 2010, we completed our review of Draft Final Revision 1 of Regulatory Guide (RG) 1.62, "Manual Initiation of Protective Actions." We also discussed this matter during our 569th meeting February 4, 2010. An earlier version of this Guide, dated November 2009, was reviewed by our Digital Instrumentation and Control (DI&C) Systems Subcommittee during a meeting on December 17, 2009. During these reviews, we had the benefit of discussions with the NRC staff, and comments from industry representatives. We also had the benefit of the documents referenced.

RECOMMENDATIONS

1. Revision 1 of RG 1.62 should not be issued as final until Recommendations 2 and 3 are addressed.
2. Revision 1 of RG 1.62 should be revised to specify that, in addition to the considerations specified in Section 4.5.2 of IEEE Standard 603-1991(IEEE 603-1991), protective actions initiated solely by manual controls are subject to consideration of: (1) the time required for the operator to analyze and manually respond to an adverse condition and (2) the time available for actions to be taken to mitigate adverse plant conditions.
3. Revision 1 of RG 1.62 should be revised to state explicitly that a system level actuation of all divisions which meets the requirements of IEEE 603-1991 is acceptable.

DISCUSSION

Revision 1 of RG 1.62 describes acceptable methods for the design and implementation of means for manual actions that provide alternate or diverse actuation of safety-related protective functions that are otherwise initiated automatically. These manually initiated actions must perform all the required protective actions provided by automatic initiation. The means for alternate manual initiation of protective actions must be safety-related and must meet all the requirements of IEEE 603-1991. The diverse means for manual initiation need not be safety-related but should satisfy Point 4 of Branch Technical Position (BTP) 7-19 of the Standard Review Plan, NUREG-0800.

Revision 1 of RG 1.62, dated February 2010, has been updated to:

- Reference the current IEEE 603-1991 in addition to IEEE 279-1971.
- Revise “system level” to “division level” as the reference point for manual initiations consistent with IEEE 603-1991.
- Address manual initiation of digital protection and control systems.
- Include guidance for Diversity and Defense-in-Depth (D3) in accordance with NUREG-0800, BTP 7-19.
- Include options for separate safety-related and non-safety-related manual actions or a single safety-related manual action.

IEEE 603-1991, Section 4.5.2 states that protection initiated solely by manual means must be justified, but does not require consideration of the time available and the time required for operator action.

The proposed Appendix A to Chapter 18 of NUREG-0800 and BTP 7-19 only address manual operator action as a diverse backup to automatic protection, not as the primary mode of protection.

No other regulations or guidances provide a consolidated list of considerations for protective actions initiated solely by manual controls. Therefore, the Discussion Section of RG 1.62 Revision 1 should be revised to specify that, in addition to the considerations specified in Section 4.5.2 of IEEE 603-1991, protective actions initiated solely by manual controls are subject to consideration of: (1) the time required for the operator to analyze and manually respond to an adverse condition and (2) the time available for actions to be taken to mitigate adverse plant conditions.

The proposed change from “system level” to “division level” as the reference point for manual initiations eliminates an inconsistency between IEEE 603-1991, which requires division level actuation, and RG 1.62 Revision 0 which stated that manual actuation at the system level was acceptable.

Industry raised concerns with this change on the basis that design flexibility and simplicity would be adversely impacted by reinforcing division level actuation without specifying that system level actuation of multiple divisions was also acceptable as long as it met the criteria for independence, single failure, and minimum equipment requirements of IEEE 603-1991. The staff noted that Section A of the RG states that “Finally, the standard defines a “division” as the designation applied to a given system or set of components that enables the establishment and maintenance of physical, electrical, and functional independence from other redundant sets of components.” Thus, they argued that Revision 1 of RG 1.62 already permits system level manual initiation that meets the criteria for independence and single failure.

It is difficult to interpret the definition of “division” to also mean “system” since it specifies “independence from other redundant sets of components.” To provide clarity and preclude misinterpretation, Revision 1 of RG 1.62 should state explicitly that a system level actuation of

all divisions which meets the requirements of IEEE 603-1991 is acceptable. Revision 1 of Regulatory Guide 1.62 should not be issued as final until the recommended revisions are addressed.

Sincerely,

/RA/

Said Abdel-Khalik
Chairman

References:

1. U.S. Nuclear Regulatory Commission, Draft Revision 1, Regulatory Guide 1.62, "Manual Initiation of Protective Actions," 02/2010 (ML100880293)
2. U.S. Nuclear Regulatory Commission, Draft Revision 1, Regulatory Guide 1.62, "Manual Initiation of Protective Actions," 11/2009 (ML092530559)
3. IEEE Standard (STD) 603-1991, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations"
4. IEEE Standard (STD) 279-1971, "IEEE Standard Criteria for Protection Systems for Nuclear Power Generating Stations"
5. U.S. Nuclear Regulatory Commission, Standard Review Plan, NUREG-0800, BTP 7-19, "Guidance for Evaluation of Diversity and Defense-In-Depth in Digital Computer-Based Instrumentation and Control Systems," 03/19/2007 (ML070550072)
6. U.S. Nuclear Regulatory Commission, Standard Review Plan, NUREG-0800, Chapter 18, Appendix A, "Guidance for Crediting Manual Operator Actions in Diversity and Defense-in-Depth (D3) Analyses," 11/20/2009 (ML092950353)
7. U.S. Nuclear Regulatory Commission, Interim Staff Guidance 5 Revision 1, "Highly-Integrated Control Room - Human Factors," 11/03/2008 (ML082740440)

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References:

1. U.S. Nuclear Regulatory Commission, Draft Revision 1, Regulatory Guide 1.62, "Manual Initiation of Protective Actions," 02/2010 (ML100880293)
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3. IEEE Standard (STD) 603-1991, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations"
4. IEEE Standard (STD) 279-1971, "IEEE Standard Criteria for Protection Systems for Nuclear Power Generating Stations"
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7. U.S. Nuclear Regulatory Commission, Interim Staff Guidance 5 Revision 1, "Highly- Integrated Control Room - Human Factors," 11/03/2008 (ML082740440)

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